

Claims:

1. A method for monitoring the quality of spot welds, particularly for robotic applications, in which metal sheets are welded with each other via spot-welding tools by pressing at least two electrodes against each other with said metal sheets being arranged therebetween, and feeding the same with power, and carrying out an assessment of the welding spot via an evaluation means and, in particular, optical visualization, characterized in that a strip (7) or foil is inserted between the electrodes (6) or electrode caps (8) and the metal sheets (3, 4), which strip (7) is conveyed on after a welding process, and wherein said strip (7) or foil is configured in a manner that a mirror-inverted and, in particular, proportional image or reproduction (14) of the welding spot (13) produced on the workpiece is formed on the strip (7) or foil during the welding process and said mirror-inverted image or reproduction (14) formed on the strip (7) or foil is detected and evaluated by said evaluation means, with the size, shape and position of the welding spot (13) being concluded from said image or reproduction (14) by said evaluation means, or a control and/or evaluation device of a welding apparatus.
2. A method according to claim 1, characterized in that the material of the strip (7) or foil, or a coating applied thereon, is tuned to the materials of the metal sheets (3, 4) to be welded, so that the temperature occurring during welding produces the image or reproduction (14), which is formed on account of a detectable change in the condition, particularly color change, reaction or change in the aggregation state, of the strip 7 or foil, or of the coating applied thereon.
3. A method according to claim 1 or 2, characterized in that, when welding aluminum sheets (3, 4), a tinplate strip (7) or a strip (7) having a tin coating is preferably used.
4. A method according to claim 1 or 2, characterized in that, when welding zinc-coated sheets (3, 4), a copper strip (7) or a strip (7) having a coating of copper is used.
5. A method according to one or several of the preceding claims, characterized in that a coat of lacquer is applied on the strip (7) or foil, which coat of lacquer melts or evaporates at the temperature generated by the welding process, thus forming again

a mirror-inverted, proportional image or reproduction (14).

6. A method according to one or several of the preceding claims, characterized in that the evaluation of the strip (7) is carried out after every welding spot (13) or after any desired number of welding spots (13).

7. A method according to one or several of the preceding claims, characterized in that for the evaluation or determination of the size, shape or position of the welding spot (13), an optical picture is made by the evaluation means, particularly a camera, and the dimensions of the picture of the reproduction (14) or image are measured.

8. A method according to one or several of the preceding claims, characterized in that for the evaluation or determination of the size, shape or position of the welding spot (13), a digital signal is emitted by the evaluation means, which signal is evaluated.

9. A method according to one or several of the preceding claims, characterized in that the determined dimensions of the image or reproduction (14) are preferably multiplied by a deposited factor in order to obtain the actual dimensions of the welding spot (13).

10. A method according to one or several of the preceding claims, characterized in that the image or reproduction (14) on the strip (7) is compared with a deposited reference in order to evaluate the welding point (13).

11. A method according to one or several of the preceding claims, characterized in that the determined dimensions of the welding spot (13) are recorded in a welding protocol or in a database.

12. A method according to one or several of the preceding claims, characterized in that the strip (7) or foil is removed from a welding tong (2) or spot-welding apparatus and evaluated in a separate evaluation unit at the end of a welding process, which may comprise several welding spots (13).